

REMARKS

This is in response to the Office Action of 20 September 2005. Applicant respectfully requests reconsideration and allowance of the subject Application.

No Claims are cancelled by this amendment and no Claims are added.

Claims 30, 35, 36 and 37 are amended.

Accordingly, Claims 30-37 are pending in this application.

Claim Objections

The amendments to claims 30, 35, 36 and 37 are purely of form to correct informalities noted by the Office, and are not to overcome prior art or any other objections/rejections. In particular, Applicant amended Claims 30 and 37 to correctly recite the phrase "based on at least."

The Office suggests there is no teaching in Applicant's specification of a *south side wrap* (Claim 35) interposed between a process layer and a connection-oriented layer, and *north side wrap* (Claim 36) interposed between a network layer and a connection-oriented protocol layer.

Applicant directs the Office's attention to page 8 of the specification where the penultimate and last paragraphs discuss wrapping. Additionally, please see page 14, second paragraph, and page 17, second and third paragraph, for further discussion of south side and north side *wrappers*. Finally, Figures 3A, 3B, 4A and 4B all show a *south side wrapper* and a *north side wrapper* as taught by the present claimed invention. The terms "south side wrap" and "north side wrap" refer to these wrappers. However, for consistency, Claims 35 and 36 have been amended to clearly reflect the teachings of the specification and correct the informality.

35 U.S.C. § 103 CLAIM REJECTION

Claims 30-37 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,018,805 to Ma, et al (hereinafter "Ma"), in view of U.S. Patent No. 6,351,487 to Lu (hereinafter "Lu"). Applicant respectfully traverses the rejection.

Claimed Invention

Claims 30-37 are directed to methods of, and systems for, recovering from a failure of server with a client. The method maintains the state of the connection to the client process layer, and not the state of the process layer, which is easier. A layer of software called "wrapping" surrounds the connection-oriented network protocol layer (such as a TCP layer) and intercepts all communication with that layer, such as communication originating from a network layer or a process layer. The intercepted communications and connection state information associated with intercepted communications received from the wrapping layers is logged. When it is determined that a connection with the server fails, the wrapping layers respond to the client on behalf of the server based in part, on the logged connection state information. A state of connection associated with the connection-oriented layer prior to the failure is restored, based in part, on the connection state information received from the wrapping layers. There is **no need to interpose a proxy or intermediary** between the client computer and the server computer. Servers using the invention can crash and recover without dropping connections. The act of restoring the state of connection associated with the connection-oriented layer is invisible to the client.

REFERENCES

The Office cites Ma & Lu in its § 103 rejection of Claims 30-37.

Ma teaches a recoverable distributed-object application having a client object running on a client machine on a network and a *first* server object on a first server machine on the network with an intelligent proxy running on the client machine. Col. 2, lines 24-28. Ma also teaches establishing a connection to a *second* server. Col. 4, lines 40-46. When the client communicates with the server, a proxy for the server is created on the client machine. Col. 4, lines 36-42. The intelligent proxy establishes the new connection to a *second* server when the *first* server object does not respond. Col. 2, lines 40-45. The system of Ma is dependent upon middle-ware layers, skeletons and proxies. Col. 4, lines 10-11.

Ma does **not** teach a method of recovery from a failure of a server to a client that does not need to interpose a proxy or intermediary between the client and server. (See specification, page 18) Likewise, Ma fails to teach responding to the client on behalf of the server by wrapping layers, nor responding without the need of a second server.

Lu is directed to a computer system using a first DSL modem to communicate packets to a second DSL modem after communication is established between the two modems. (Lu, Abstract). The system also includes a computer program, such as an operating system, and a field (subdivision of a date record) for providing data parameters to the computer program. (Lu, Abstract).

Lu is related to DSL technology and is directed to a system with a modem device driver. (Lu, Col. 1, lines 38-40). Lu does not teach wrapping layers as taught by the present claimed invention. Lu specifically teaches NDIS wrapping, which relates to modem drivers and not a process layer, as taught by the present claimed invention. NDIS is a network driver interface specification whose purpose is for communication so that a modem device driver doesn't need to communicate directly to a stack driver. (Lu, Col. 17, lines 55-57). The NDIS wrapper provides a device driver programming interface allowing multiple network protocols to share the same network. (Lu, Col 17, lines 65- Col. 18, lines 1-3).

Claim Analysis for § 103 Rejection:

Independent Claim 30 recites:

A method of recovering from a failure of a server to a client, comprising:

using wrapping layers to intercept communications to a connection-oriented protocol layer, the communications originating from a network layer and a process layer of a layered communications framework, wherein a first wrapping layer is interposed between the process layer and the connection-oriented protocol layer, and wherein a second wrapping layer is interposed between the network layer and the connection-oriented layer;

logging the intercepted communications and connection state information associated with intercepted communications received from the wrapping layers;

determining when a connection with the server fails;

responding to the client on behalf of the server by the wrapping layers based on least, in part, on the logged connection state information; and

restoring a state of connection associated with the connection-oriented layer prior to the failure, based on at least, in part, on the connection state information received from the wrapping layers, wherein restoring the state of connection associated with the connection-oriented layer is invisible to the client.

Ma fails to teach or suggest the method of Claim 30 because Ma requires the use of *proxies* and requires the use of a *second* server. According to the teachings of Ma, when the client communicates with the server, a *proxy* for the server is created on the client machine. Col. 4, lines 36-42. The intelligent *proxy* establishes the new connection to a *second* server when the *first* server object does not respond. Col. 2, lines 40-45. The system of Ma is dependent upon middle-ware layers, skeletons and proxies. (Col. 4, lines 10-11), whereas the present claimed invention (Claim 30) does **not** need to interpose a proxy or intermediary between the client computer and the server computer.

The Office admits that Ma fails to disclose “proxies being wrappers, and wrappers interposed between the network layer and the connection-oriented layer.” (Office Action, Page 4, paragraph 9) However, the Office contends that Lu teaches wrappers (60, 64) (col. 36-48 and also teaches wrappers being interposed between a network layer (54) and a connection oriented layer (58) (col. 17, lines 38-48, Fig. 5).

The *wrappers* discussed by Lu are specific to *drivers* – NDIS wrappers as taught by Lu are not the same as the wrapping layer of software at the process layer as taught by Applicant’s Claims.

NDIS is a network driver interface specification whose purpose is for communication so that a modem device driver doesn’t need to communicate directly to a stack driver. (Lu, Col. 17, lines 55-57). The NDIS wrapper provides a device driver programming interface allowing multiple network protocols to share the same network. (Lu Col 17, lines 65- Col. 18, lines 1-3).

Wrappers of the present claimed invention are interposed at a process layer and a network layer, respectively, and are **not** associated with a driver device.

Furthermore, because Lu is directed to DSL technology and a system with a modem device, there is no motivation to combine the teachings of Lu with the teachings of Ma, which relates to recovery following a server crash. Again, Lu is entirely unrelated to the method of the present claimed invention because it is concerned with communication of multiple modems using DSL. There is no teaching or discussion of recovery of a client-server communication following a crash of the server in Lu.

The aforementioned references are devoid of any teaching or suggestion of how to restore a state of connection associated with a connection-oriented layer prior to failure through the use of wrapping layers. There is simply no discussion in either Ma or Lu of restoring connections with a server in a manner as recited in Claim 30. Thus, the cited references do not teach or suggest the method of Claim 30 and for the same reason fail to teach the system of independent Claim 37, either singularly or in combination. Accordingly, there would be no motivation to combine Ma and Lu, to arrive at Claims 30 and 37.

Accordingly, for all the reasons described above, the combination fails to teach or suggest independent Claims 30 or 37.

Claims 31-36 depend from Claim 30 and are allowable by virtue of this dependency. Additionally, these claims recite additional features that, when taken together with those of Claim 30, define methods that are not taught or suggested by the Ma and Lu combination.


Conclusion

Pending Claims 30-37 are in condition for allowance. Applicant respectfully requests reconsideration and issuance of the subject application. If any issues remain that preclude issuance of this application, the Examiner is urged to contact the undersigned attorney before issuing a subsequent Action.

Respectfully submitted,

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